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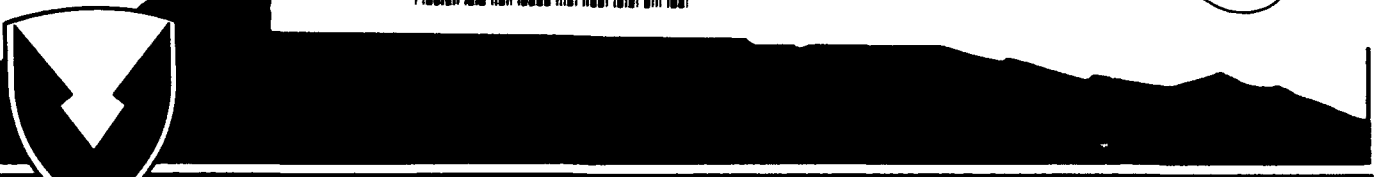

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U.S. ARMY
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— COMMITTED TO PROTECTION OF THE ENVIRONMENT —

Final Decision Document

for the Interim Response Action

for the Improvement of the North Boundary System

at Rocky Mountain Arsenal

Via Construction of Groundwater Recharge Trenches

July, 1988

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Prepared for:

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U.S. Army Program Manager's Office for

Rocky Mountain Arsenal Contamination Cleanup

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THE OBJECTIVE OF THIS INTERIM RESPONSE ACTION IS TO CORRECT AN HYDRAULIC IMBALANCE IN THE NORTH BOUNDARY TREATMENT AND RECHARGE SYSTEM. TEN DEEP GRAVEL FILLED TRENCHES WILL BE CONSTRUCTED ALONG THE DOWNGRADIENT SIDE OF THE SLURRY WALL TO INCREASE THE RECHARGE CAPACITY OF THE SYSTEM.

THIS FINAL DECISION DOCUMENT PROVIDES SUMMARIES OF:

1. ALTERNATIVES CONSIDERED
2. SIGNIFICANT EVENTS LEADING TO THE INITIATION OF THE IRA
3. THE IRA PROJECT
4. THE APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS, STANDARDS, CRITERIA, OR LIMITATIONS (ARAR'S) ASSOCIATED WITH THE PROGRAM.

COMMENTS AND RESPONSES ARE FOUND IN THE APPENDIX.

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FINAL DECISION DOCUMENT FOR THE INTERIM RESPONSE ACTION FOR THE IMPROVEMENT OF THE NORTH BOUNDARY SYSTEM AT ROCKY MOUNTAIN ARSENAL VIA CONSTRUCTION OF GROUNDWATER RECHARGE TRENCHES

FILE COPY

Rocky Mountain Arsenal
Information Center
Commerce City, Colorado

JUNE 1988

Prepared For:

U.S. ARMY PROGRAM MANAGER'S OFFICE FOR
ROCKY MOUNTAIN ARSENAL CONTAMINATION CLEANUP

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FINAL DECISION DOCUMENT FOR THE INTERIM RESPONSE ACTION FOR THE IMPROVEMENT OF THE NORTH BOUNDARY SYSTEM AT ROCKY MOUNTAIN ARSENAL VIA CONSTRUCTION OF GROUNDWATER RECHARGE TRENCHES

1.0 INTRODUCTION

The Interim Response Action (IRA) for the Improvement of the North Boundary System at Rocky Mountain Arsenal (RMA) Via Construction Of Groundwater Recharge Trenches is being conducted as part of the IRA Process for RMA in accordance with the June 5, 1987 report to the court in United States v. Shell Oil Co. and the proposed Consent Decree.

This IRA project is an upgrade of the treated groundwater recharge system associated with the North Boundary Containment/Treatment System (NBC/TS). The existing system includes a slurry wall, dewatering wells upgradient (south) of the wall, a water treatment facility, and recharge wells downgradient (north) of the slurry wall. The existing recharge system does not have the capability to distribute sufficient water in appropriate areas downgradient of the slurry wall. The result has been a hydraulic imbalance across the slurry wall. The water table on the upgradient side of the slurry wall is higher than the water table on the downgradient side of the slurry wall which is the reverse of what was intended in the original design. This reverse head difference may impair the effectiveness of the NBC/TS by allowing contaminated groundwater to pass around, under, or through the barrier.

In order to correct this hydraulic imbalance, ten gravel filled recharge trenches (160 feet long, approximately 12-20 feet deep, and 2.5-3 feet wide) will be constructed along the downgradient (north) side of the slurry wall. Water will be piped under pressure from the treatment plant through a new effluent pipe to the ten trenches. Flow into each trench will be metered. Two piezometers will be installed in each trench and another between each trench close to the slurry wall for monitoring water elevations. A membrane will be installed on top of the gravel to prevent most gravity-induced silting of the gravel. To minimize maintenance of the trench system with respect to potential carbon fines carry-over, the water distribution system has been designed to accommodate internal cleaning equipment and has cleanout/flushing capabilities.

2.0 HISTORY OF RMA NORTH BOUNDARY SYSTEM

Rocky Mountain Arsenal occupies over 17,000 acres, approximately twenty-seven square miles, of land in Adams County, directly northeast of metropolitan Denver, Colorado. (See Figure 1, installation location map.) The property was purchased by the government in 1942 for use in World War II to manufacture and assemble chemical warfare materials, such as mustard and lewisite, and incendiary munitions. Starting in the 1950's, RMA produced the nerve agent GB (isopropyl methylphosphonofluoridate) until late 1969. Since 1970, RMA has primarily been involved with the destruction of chemical warfare materials. In addition to these military activities, a major portion of the plant facilities were leased to private industries (including Shell Chemical Co.) beginning in 1946 for the manufacture of various insecticides and herbicides.

During the 1940's and 1950's aqueous industrial wastes generated at both the Chemical Plants Area and the North Plants Area were routinely discharged into several unlined evaporation ponds (labeled Basins A, B, C, D, and E) located in the center of the installation. (Figure 2 shows locations of these unlined evaporation ponds and the Plants Areas with respect to the rest of RMA.) Groundwater contamination was first noticed in the mid 1950's when minor crop damage was discovered on land north and northwest of the Arsenal. This discovery of contaminants in the groundwater led to the placement of an asphalt liner in Basin F in 1956. At that time aqueous wastes in Basin A were transferred to Basin F and aqueous wastes produced thereafter were discharged directly to Basin F. Solid wastes were routinely disposed of in trenches and pits located adjacent to Basin A and the Plants Areas.

In the mid 1970's two organic compounds, diisopropylmethylphosphonate (DIMP) and dicyclopentadiene (DCPD) were identified in groundwater off the installation. (Alluvial groundwater beneath RMA generally flows from southeast to northwest.) (Figure 3 represents the generalized alluvial groundwater flow across RMA.) In 1975 the Colorado Department of Health (CDH) issued three administrative orders to cease and desist all authorized discharges to waters of the State, to take steps to clean up DIMP and DCPD, and to institute groundwater monitoring.

Late in 1977 construction began on a pilot containment/treatment system 250 feet south of the RMA northernmost boundary. The pilot system consisted of a bentonite slurry wall, groundwater dewatering wells, a granular activated carbon treatment facility and recharge wells. The goals of the pilot system were to establish the feasibility of barrier containment in dealing with groundwater contamination, and to collect data required for the development of a full-scale containment system.

In 1979 the pilot containment/treatment system was expanded. The slurry wall was extended to the east and the west. Additional dewatering wells were installed upgradient and recharge wells downgradient of the slurry wall. The treatment unit was expanded to treat the resulting additional flow. These expansions to the system were completed in January 1982.

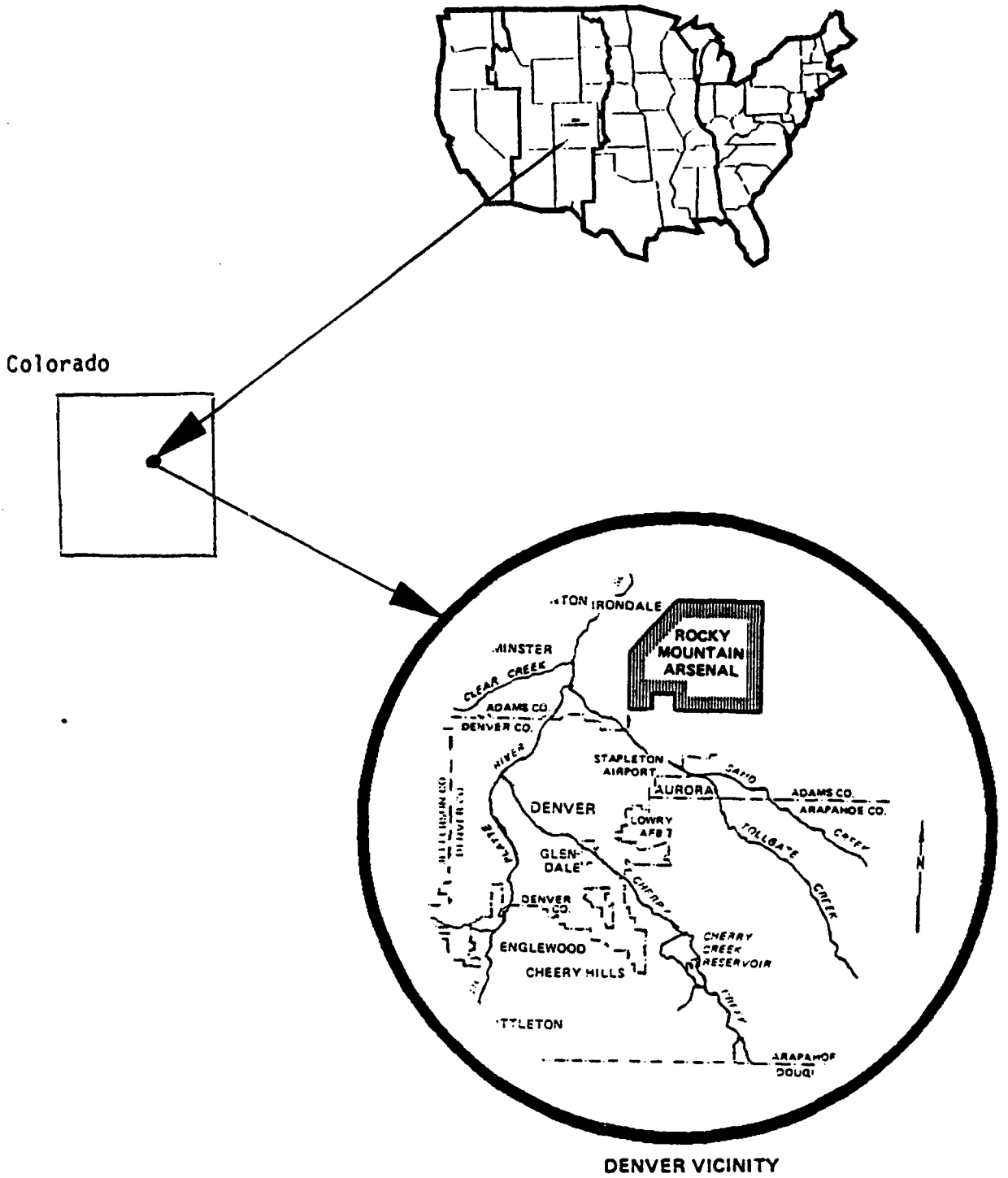


Figure 1. Installation Location Map.

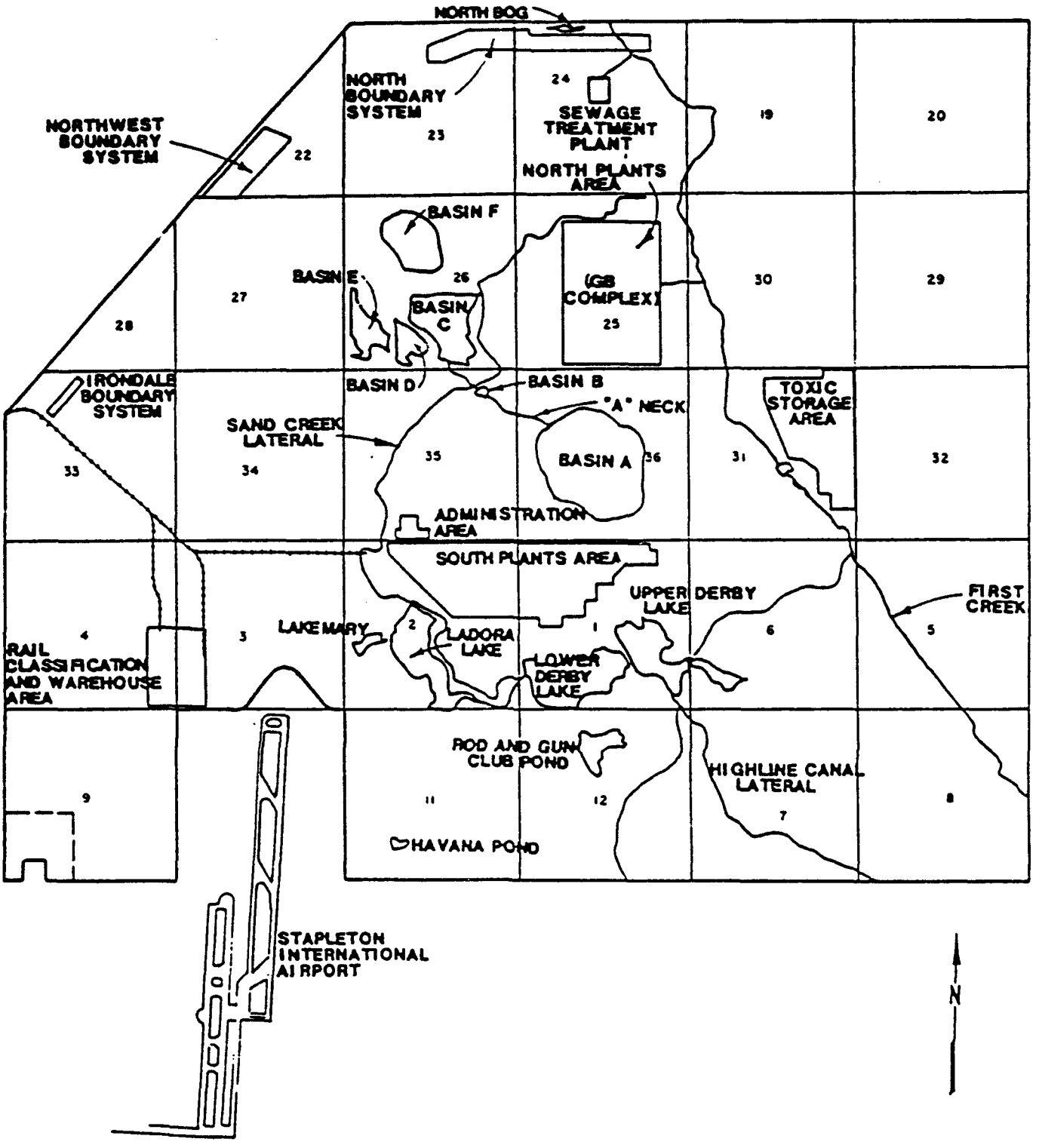


Figure 2. Rocky Mountain Arsenal Map

Source: Morrison-Knudsen Engineers, Inc.

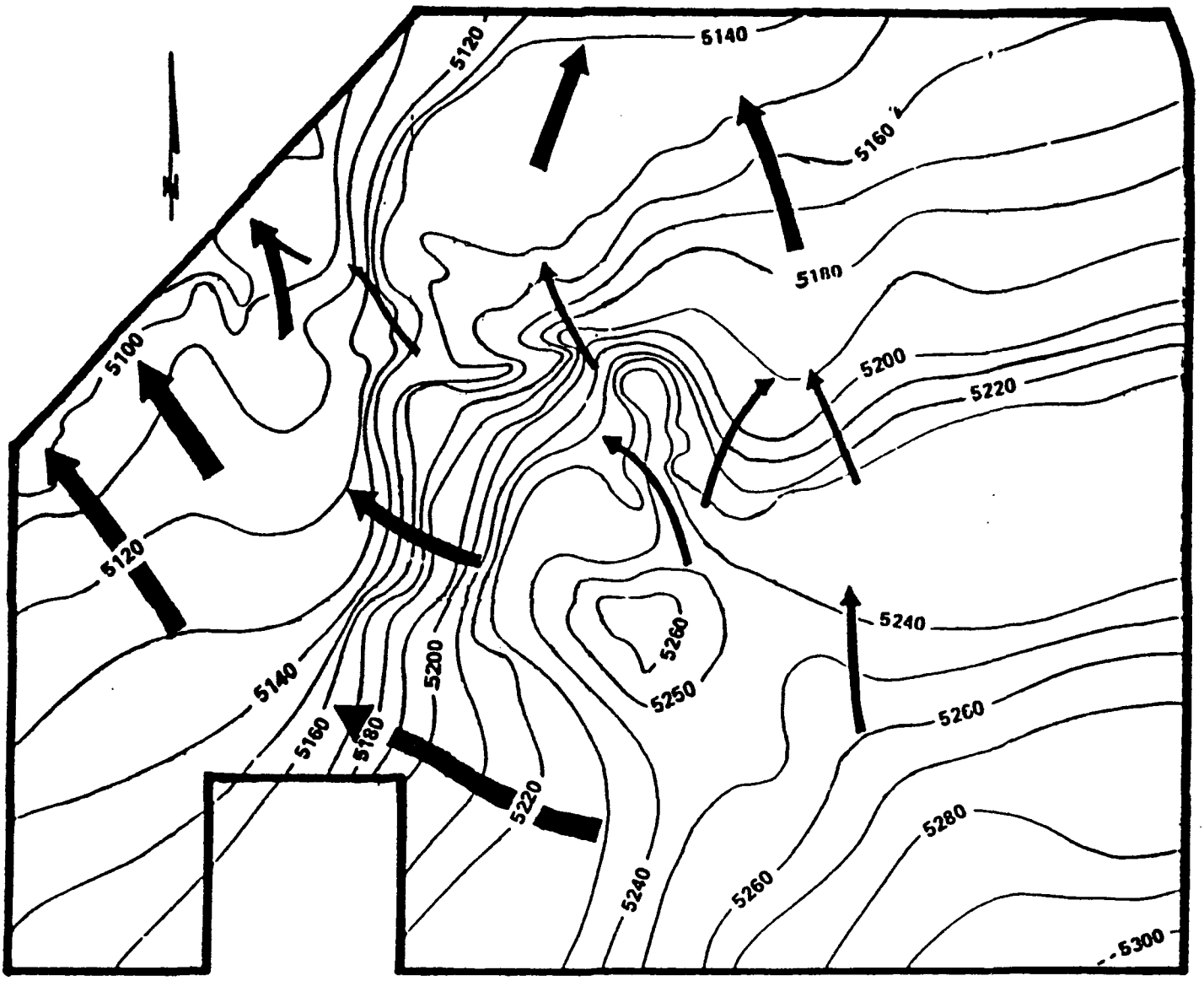


Figure 3. Generalized Alluvial Groundwater Flow Across RMA

Source: Source Control Report (USATHAMA, 1983).

Figure 4 shows the existing North Boundary Containment/Treatment System. The groundwater barrier is located parallel to and 250 feet south of the northern boundary of Rocky Mountain Arsenal. It is a 6,470 foot long, 3 foot wide, bentonite slurry wall keyed over most of its length into shale of the Denver formation at an average depth of approximately 30 feet. Fifty-four withdrawal wells pump contaminated groundwater from upgradient of the barrier to a carbon adsorption water treatment plant. The treatment plant includes a prefilter system for removing suspended solids; three 30,000 lb. capacity upflow, pulsed bed carbon adsorbers for removing organics; carbon transfer vessels; and both cartridge- and bag-type post-filters. Treated groundwater is discharged to a common sump prior to recharge. (Figure 5 is a schematic diagram of the treatment system.) Recharge to the alluvium is accomplished by 38 reinjection wells located downgradient of the slurry wall.

In December 1982, a Memorandum of Agreement (MOA) was entered into between the Colorado Department of Health, the U.S. Environmental Protection Agency, Shell Chemical Company, and the Army. The MOA initiated a cooperative development plan for a comprehensive remedy for the environmental situation at RMA.

A source control study (U.S. Army Toxic and Hazardous Materials Agency (USATHAMA), 1983) was conducted over a three year period that resulted in the submission of a final report to the MOA parties in September 1983. This report identified several remedial actions to facilitate the control and containment of contamination at RMA. The North Boundary Containment/-Treatment System was a component of the plan presented in this report.

On February 1, 1988, a proposed Consent Decree was lodged in the U.S. v. Shell Oil Company with the U.S. District Court in Denver, Colorado. The Army and Shell Oil Company agreed to share costs of the cleanup that was to be developed and performed under the oversight of the U.S. Environmental Protection Agency, with numerous opportunities for comment by the State of Colorado. The long term cleanup is a complex task that will take several years to complete. The Consent Decree specifies thirteen Interim Response Actions (IRAs) whose implementation has been determined to be necessary prior to implementation of the final remedial plan. This IRA is one of the thirteen.

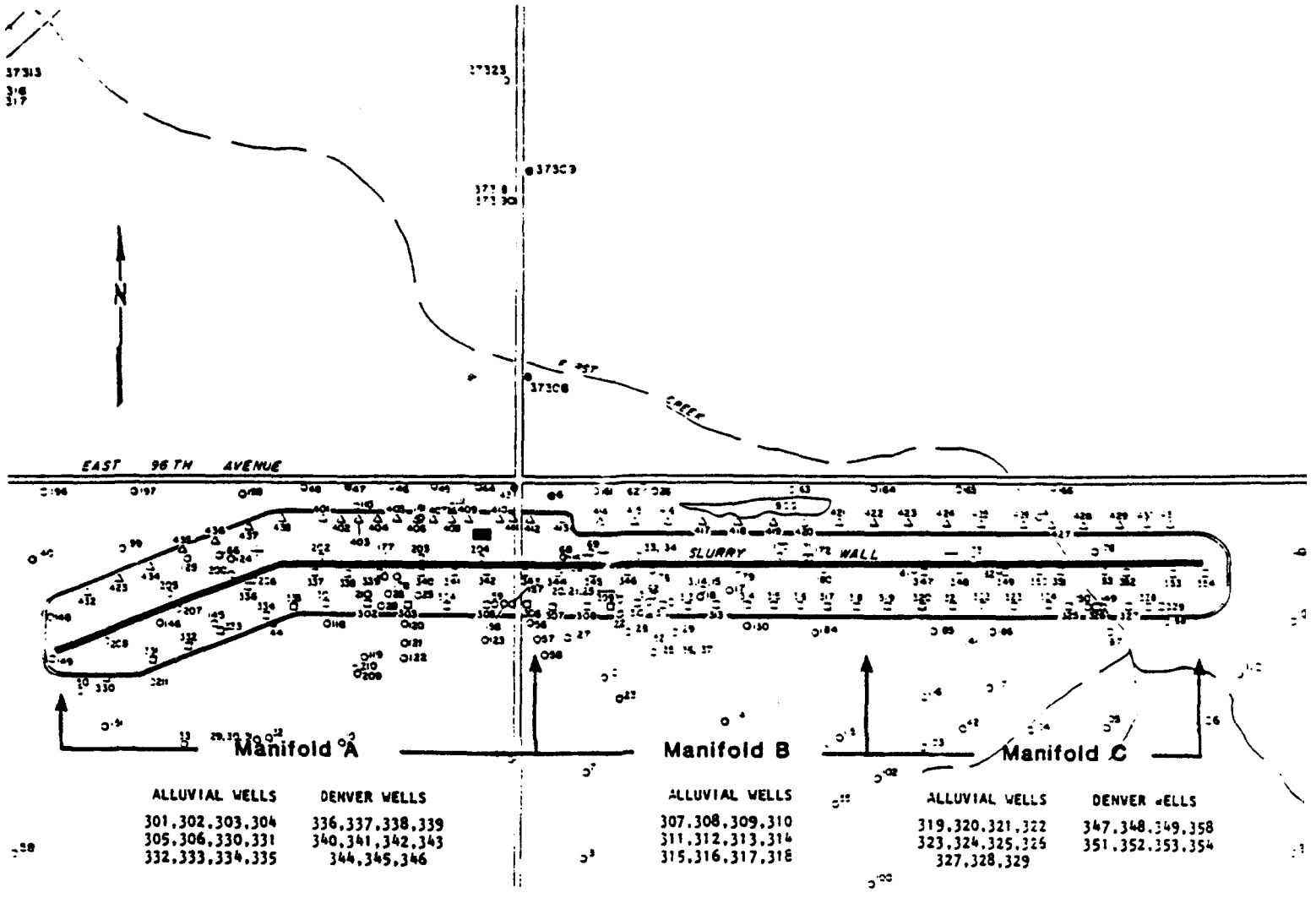


Figure 4. System Configuration, (1984 Numbers)

Source: 1984 "North Boundary Containment/Treatment System Performance Report," Volume II, USAE Waterways Experiment Station, December, 1985.

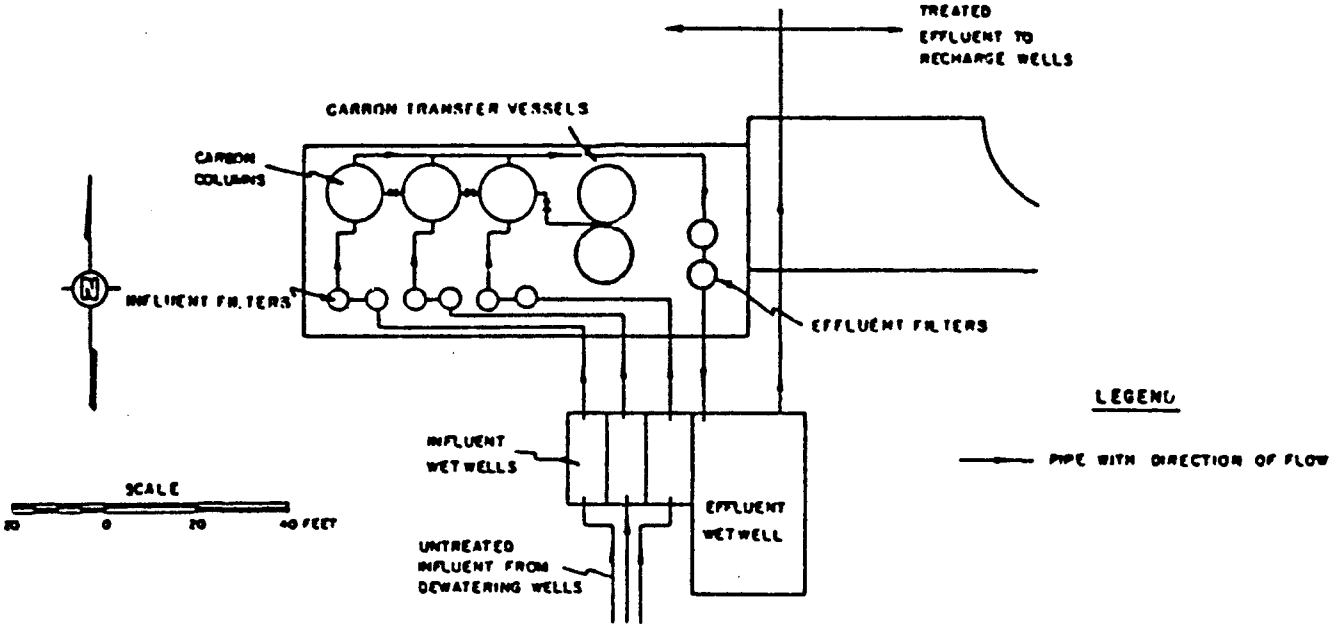


Figure 5. Ground Water Treatment Facility

Source: 1984 "North Boundary Containment/Treatment System Performance Report," Volume I, USAE Waterways Experiment Station, December, 1985.

3.0 INTERIM RESPONSE ACTION OBJECTIVES

The goal of this IRA and the complementary North Boundary System - System Improvement IRA is to improve the performance of the existing North Boundary Containment/Treatment System.

The specific objective of this IRA covering the construction of recharge trenches is to increase expeditiously the System's ability to reinject treated water to the extent that the desired positive hydraulic head will be established at the clean (north) side of the slurry wall.

Specific criteria considered in order to achieve these objectives include:

- o Increase recharge
- o Minimize technical complexity
- o Minimize cost
- o Operate year round
- o Fit geological setting
- o Operate manually except for automatic metering
- o Use pilot concept
- o Minimize silting
- o Minimize chemical and bacterial clogging
- o Minimize aeration and temperature change
- o Increase head on north side of barrier
- o Restore flow pattern and water table
- o Flush residual contaminants
- o Minimize evaporation (consumptive use of aquifer)
- o Meet designated ARARs

In addition to the specific criteria, the improvement should adhere to the following good engineering practices:

- o Minimize maintenance
- o Be constructable as designed
- o Operate for an extended life
- o Be replaceable or repairable, if necessary

This decision document provides a summary of the alternative technologies considered, a chronology of the significant events leading to the initiation of the IRA, a summary of the IRA project, and a summary of the Applicable, or Relevant and Appropriate Requirements, standards, criteria, or limitations (ARARs) associated with the program.

As specified in the Consent Decree, this Interim Response Action will, to the maximum extent practicable, be consistent with and contribute to the efficient performance of Final Response Actions.

4.0 INTERIM RESPONSE ACTION ALTERNATIVES

Alternatives were examined in the February 1988, Draft Final Report, "Proposed Interim Ground-Water Recharge System, North Boundary Area" (Waterways Experiment Station, 1988).

Five options were studied as methods of increasing the recharge capacity:

- o Supplemental wells
- o Replacement wells
- o Open ponds
- o Deep gravel trenches
- o Shallow gravel trenches

Supplemental Wells: The installation of several new recharge wells to assist the existing wells distribute groundwater has been closely considered. The installation of new wells would entail exploring with expedient, low-cost borings to determine high recharge capacity locations, then constructing a series of new wells. The wells would be screened completely through the aquifer to achieve maximum recharge rates. The desired recharge rate could be attained by the installation of many supplemental wells, however, this option is not cost effective when compared to the trenches or ponds.

Replacement Wells: This option is a variant of the supplemental wells option described above. More emphasis would be placed on redrilling and re-equipping existing wells and on correcting problems with valves, piping and well screens. A smaller number of new wells may also be required.

The well replacement option may provide the required recharge capacity, but costs may be higher than the option that relies primarily on installing new, supplemental wells.

Both well options rely on proven technology. However, they do not satisfy one of the primary objectives of this interim action, that is, to provide pilot testing of techniques that may prove to be less costly and allow much higher recharge volumes. The wells options are each more expensive than trench or open pond options when measured on the basis of new recharge capacity per dollar. In addition, wells may not provide the desired distribution of water in the heterogeneous aquifer.

Open Ponds: Recharge ponds are simple excavations, of variable dimensions, deep enough to penetrate any strata having a low permeability coefficient. Recharge ponds can be open, wide trenches on level ground or diked ponds on gentle slopes. To minimize the amount of water lost due to evaporation some type of cover must be used. Commonly, floating impermeable membrane covers are used. Construction is relatively simple and normally inexpensive, and no unusual or specialized equipment is necessary. Both construction and maintenance can be performed using a backhoe or excavator. The system can be designed and constructed in segments to allow flexible application of flow.

Routine maintenance consists of scraping the silt and clay from the infiltrating surfaces. A drawback of the open pond option is evaporation resulting in loss of water if a cover is not included. All of the water extracted is necessary to restore the hydraulic imbalance. The cost of purchasing a floating membrane cover and maintaining it to reduce evaporation loss makes this option more expensive than the trench options.

Deep Gravel Trenches: This option consists of excavating narrow, deep trenches penetrating the aquifer. Each trench would be filled with coarse gravel and have a perforated water pipe running the length of the trench. A compacted soil cap would be placed on top of the trench so that the water could be pumped into the trench under pressure. By penetrating the aquifer, a large vertical surface area could be used for recharge. The system is simple, cost effetive, and could attain the desired recharge capacity. The cost for construction and maintenance is less than that of other options discussed. The constructability is the major unknown factor. Excavation and construction into the aquifer is a new concept that has not been adequately investigated at this time. Key construction steps have been outlined to prevent caving of the trench during construction due to low cohesive strength of saturated sand. Routine excavation would stop at the top of the saturated sand. In order to minimize wall caving, gravel placement would be accomplished at the same time as excavation below the water table. Operation of this type of a system is also an area where there is little experience.

Shallow Gravel Trenches: This consists of excavating long narrow trenches similar to deep trenches, except that the excavation would just penetrate the aquifer. The difference between shallow and deep trenches is that the shallow trenches access the aquifer only through the bottom surface of the trench. The advantages of this system are low cost, simplicity and ease of construction. This system may not attain the desired recharge capacity because the bottom surface of the trench is vulnerable to silt accumulation, leading to decreasing recharge. In addition, the vertical permeability of the aquifer at the trench bottom governs water velocity and is usually much less than the horizontal permeability.

Late in 1987, Colorado State University (CSU) released a "Summary of Model Calibration and Model Simulations to Date" (December 12, 1987) and almost simultaneously the U.S. Army Engineer Waterways Experiment Station (WES), Geotechnical Laboratory completed the document "Summary of WES Analysis of Proposed Recharge Trench System for RMA North Boundary" (January 28, 1988). Both of these efforts were performed as elements of Task 36, the assessment of final remedial actions for the NBC/TS. Both assumed the use of trenches in evaluating the effectiveness of the proposed recharge system. The reports concluded that the trenches do have the potential to achieve the desired recharge rate while being cost effective.

Deep gravel trenches provide the opportunity for a large capacity groundwater recharge pilot system. This technology has not been utilized at RMA, but has the potential to be a useful method of recharge. Although the WES report indicated that constructability of a deep trench was a major unknown factor, further review of construction techniques indicates that construction of the proposed trench system will be feasible. The cost of the system based on dollars per gallon of recharge capacity is less than any of the other alternatives considered.

5.0 CHRONOLOGY OF EVENTS

The 1984 report, "North Boundary Containment/Treatment System Performance Report, "Volumes I and II (WES, 1985), identified problems related to hydraulics associated with the barrier. A significant difference in head across the barrier was documented which could result in a decrease in effectiveness of the system. This report concluded that there is a potential for contaminated groundwater to flow through or under the barrier if the water table downgradient of the barrier is below the upgradient water table. The report also stated that if water levels upgradient and downgradient of the system can be balanced, the potential for contaminated alluvial groundwater to bypass the barrier can be minimized. The 1984 report plotted contamination plumes for various groundwater contaminants approaching the north boundary. Recommendations were made to evaluate the recharge system associated with the north boundary system.

In response to the 1984 report, three major efforts were initiated. The first was Task 25, a long-term monitoring program to improve tracking of groundwater and contaminant movements. The second effort initiated was Task 36. The goals of Task 36 are to assess specific components of the NBC/TS as cited in the 1984 report (i.e., physical condition of the bentonite barrier, orientation and hydraulic conditions of the Denver Sand units, and evaluation of existing dewatering/recharge systems), which will ultimately lead to recommendations for long term improvements. The third effort was an investigation of the feasibility of using recharge trenches to alleviate the hydraulic gradient problem.

In September 1986, the Program Manager Staff Office for the Rocky Mountain Arsenal Contamination Cleanup requested WES to develop a conceptual design for an interim groundwater recharge system at the NBT area. In December 1986 WES completed their Draft "Proposed Interim Response Ground Water Recharge System" (WES, 1986). The report assesses several recharge options including the recommended trench system.

"Rocky Mountain Arsenal North Boundary Containment/Treatment System Operational Assessment Report FY85/86," Volumes I, II, & III released June 1987 indicates that the northward gradient across the slurry wall continues to exist.

5.1 COORDINATION WITH THE PARTIES AND THE STATE

The U.S. Environmental Protection Agency, Shell Oil Company and the State of Colorado have received copies of the North Boundary reports and have commented on them.

After the release of the 1984 report, the U.S. Environmental Protection Agency (EPA) Region VIII commented on the report and requested that there be an increase in head downgradient of the barrier to counteract potential pressure increases upgradient of the barrier. The State of Colorado also urged the implementation of the report's recommendations.

The Task 36 Technical Plan (ESE, 1987) was reviewed by U.S. EPA Region VIII and CDH. Both agencies made comments regarding the inadequate recharge system and the desired hydraulic conditions. These comments further emphasized the need for an interim response action.

In Shell Oil Company's comments on the Task 36 Technical Plan, Shell recommended that top priority be put on establishing adequate dewatering and recharge capacity needed to achieve the desired hydraulic gradient. Shell further supported this project by having one of their contractors prepare design specifications for the trenches.

6.0 SUMMARY OF THE INTERIM RESPONSE ACTION PROJECT

Deep gravel-filled trenches are selected as the best option for the proposed interim response action to supplement the existing groundwater recharge system for the North Boundary Containment/Treatment Facility. The basis for this selection is their large recharge capacity, feasibility of construction, minimal maintenance requirements, cost effectiveness, and likelihood of meeting ARARs.

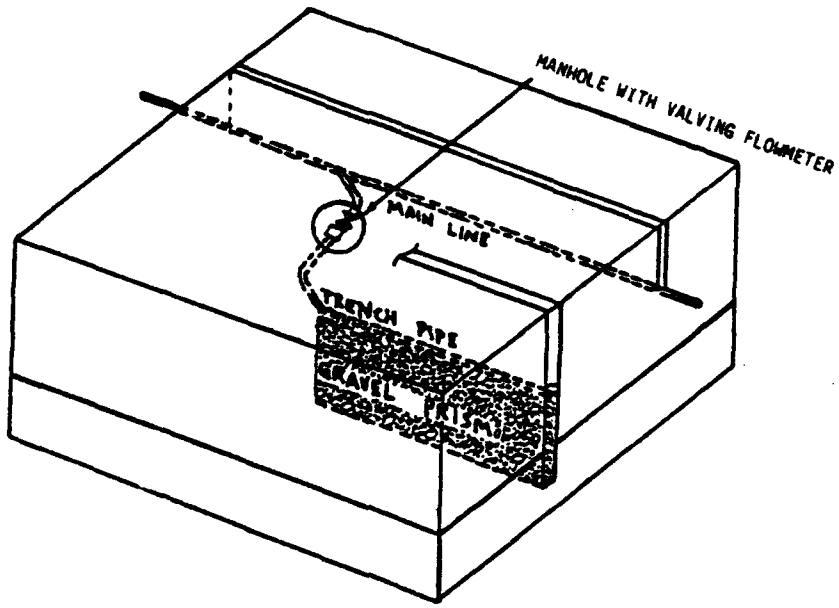
The basic design consists of installing ten gravel-filled trenches approximately 160 feet long, penetrating to the bedrock surface or a depth of twenty feet, whichever is shallower. The recharge water coming from the treatment plant would be fed from one end of each trench longitudinally through a plastic pipe near the top of the gravel phase. A permeable membrane would separate the gravel phase from soil backfill. Figure 6 illustrates the concept and design. A design objective is to achieve an initial maximum recharge rate of approximately 150 gpm. This will improve distribution of water on the western portion of the North Boundary System, where the hydraulic imbalance is the greatest.

The system instrumentation will be capable of measuring the rate of flow and the total accumulated flow into each recharge trench. Flow into each trench may be controlled by a valve. Pressure gauges will be installed in the discharge pipes in each trench, downstream of the flow metering equipment. Piezometers will be installed in each trench and near the containment wall for monitoring water levels. The flow rates will be monitored in the Operating Building.

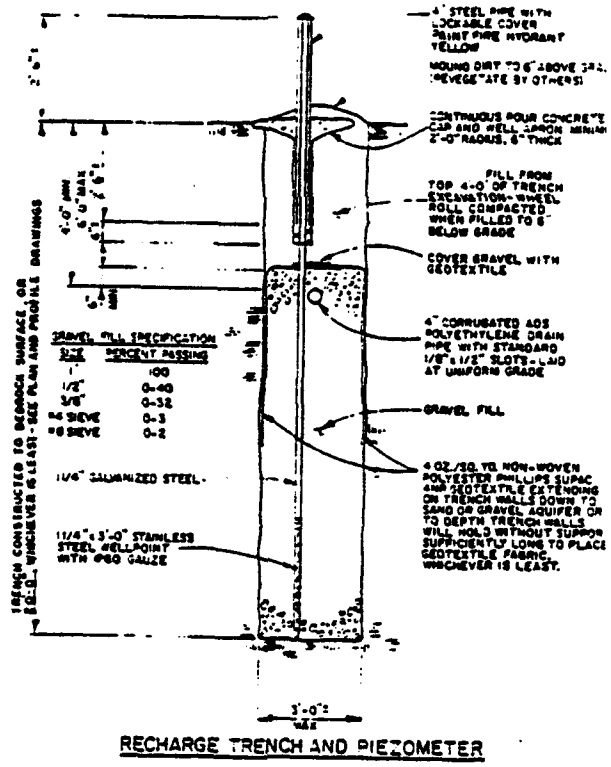
6.1 HEALTH AND SAFETY PLAN

A health and safety plan has been developed for the prevention of occupational injuries and illnesses during field activities at RMA. This plan addresses health and safety requirements of contractors and their authorized subcontractors. Compliance with this plan will be compulsory and the contractors will be responsible for self-enforcement and compliance with this plan. The safety and health plan was developed taking into consideration known hazards as well as potential risks. Comprehensive environmental monitoring and site-specific personal protection are combined in an effort to best protect workers.

A site specific health and safety plan for work to be performed on the North Boundary trenches will be developed and included with the design specification package.



Typical Trench Design



RECHARGE TRENCH AND PIEZOMETER

Figure 6. Recharge Trench Design

Source: Morrison Knudsen Engineering.

7.0 IRA PROCESS

With respect to this IRA for improvement of the North Boundary System through construction of the groundwater recharge trenches, the IRA Process is as follows:

1. The scope of the IRA was described in the June 5, 1987 report to the Court of the United States (the Army and EPA), Shell and the State in United States v. Shell Oil Co.: "The parties also agree that the rate of reinjection of treated groundwater at the North Boundary Containment System should be increased to improve system performance. The United States, in cooperation with the parties, is assessing the feasibility of a groundwater recharge trench to be located just north of the boundary system. The objective of such a recharge trench is to enhance significantly the rate of reinjection of treated groundwater." Similar language appears in paragraph 9.1(b)(iii) of the proposed Consent Decree.

2. EPA, Shell and the State were afforded an opportunity to identify, on a preliminary basis, any potential ARARs.

3. The Army is issuing this proposed Decision Document for the IRA for the Improvement of the North Boundary System RMA Via Construction of Groundwater Recharge Trenches for a 30-day public comment period. The proposed Decision Document is also supported by an administrative record.

4. Promptly after the close of the comment period on the proposed Decision Document, the Army shall transmit to the other Organizations, DOI and the State a draft final IRA Decision Document.

5. Within 15 days of issuance of the draft final Decision Document for the IRA for the Improvement of the North Boundary System RMA Via Construction of Groundwater Recharge Trenches, an Organization (or DOI where appropriate) may invoke Dispute Resolution.

6. After the close of the period for invoking Dispute Resolution (if Dispute Resolution is not invoked) or after the completion of Dispute Resolution (if invoked), the Army shall issue a final Decision Document for the IRA for the Improvement of the North Boundary System RMA Via Construction of Groundwater Recharge Trenches. The Army shall also notify the public of the availability of the final IRA with the supporting record. Only preliminary design work for the IRA may be conducted prior to the issuance of the final IRA Decision Document.

7. Thereafter, the IRA for the Improvement of the North Boundary System RMA Via Construction of Groundwater Recharge Trenches may be raised for judicial review in accordance with Sections 113 and 121 of the Comprehensive Environmental Response, Compensation and Liability Act of 1980, as amended (CERCLA), 42 U.S.C. 9613 and 9621.

8.0 ARARs

8.1 ATTAINMENT OF ARARs

The interim action process reported to the Court on June 5, 1987, in United States v. Shell Oil Co. provides that the IRAs (including the IRA for the Improvement of the North Boundary System RMA Via Construction of Groundwater Recharge Trenches), shall, to the maximum extent practicable, attain ARARs. A similar provision appears in paragraph 9.7 of the proposed Consent Decree. This IRA for improvement of the North Boundary Containment System Via Construction of Groundwater Recharge Trenches is a part of a comprehensive program to improve the North Boundary System on an interim basis which will also fit into the Final Response Action by treating groundwater flowing off the Arsenal.

8.2 IDENTIFICATION AND SELECTION OF ARARs

By letter of January 19, 1988, counsel for the Army requested that EPA, Shell and the State preliminarily identify in writing the potential ARARs that they believe may be pertinent to the IRA for the Improvement of the North Boundary System RMA Via Construction of Groundwater Recharge Trenches. EPA responded by letter of March 30, 1988 with its preliminary suggestions. Shell and the State did not nominate any potential ARARs for consideration.

8.3 SELECTION OF ARARs AND DETERMINATION OF ARAR IMPACT

8.3.1 AMBIENT OR CHEMICAL-SPECIFIC ARARs

Ambient or chemical-specific requirements set health or risk-based concentration limits or ranges in various environmental media for specific hazardous substances, pollutants, or contaminants. Such ARARs either set protective cleanup levels for the chemicals of concern in the designated media or indicate an appropriate level of discharge. There are no chemical-specific ARARs that are solely pertinent to this IRA for Improvement of the North Boundary System through the construction of recharge trenches.

It is the Army's intent to address in North Boundary System - System Improvement IRA (IR-03-42) the ARARs that pertain to the treatment of contaminants in the groundwater that is being treated by the North Boundary System.

8.3.2 LOCATION-SPECIFIC ARARs

8.3.2.1 DESCRIPTION

Location requirements set restrictions on activities depending on the characteristics of the site or the immediate environment. These requirements function like action-specific requirements. Alternative remedial actions may be restricted or precluded depending on the location or characteristics of the site and the requirements that apply to it. With respect to this interim action, the provisions of 40 CFR 141.5 (Siting requirements for public water systems) are relevant and appropriate.

The foregoing regulation does not constitute an "applicable" location-specific ARARs in this context. Neither the trenches to be constructed pursuant to this IRA nor the North Boundary System are intended to constitute a public water system, and no one is presently drinking groundwater that is treated by the North Boundary System. Thus, the regulatory jurisdiction otherwise associated with the Safe Drinking Water Act and the National Primary Drinking Water Regulations simply does not arise. In these circumstances, the nature of the remedial action is such that the jurisdictional prerequisites of these requirements are not met. Thus, the identified regulation is not applicable here.

Nevertheless, Section 141.5 does address location-specific problems or situations sufficiently similar to those encountered at the RMA CERCLA site that use of this regulation is well-suited to the site, and accordingly it will be treated as "relevant and appropriate." A requirement that is "relevant and appropriate" must be complied with to the same degree as if applicable. However, there is more discretion in this determination; it is possible for only part of a requirement to be considered relevant and appropriate; the last being dismissed if judged not to be relevant and appropriate in a given case.

Accordingly, the trenching improvements of the North Boundary System will be located to conform to the substantive siting provisions of 40 CFR 141.5 as follows:

(i) The trenching improvements will not be located where there is a significant risk from earthquakes, floods, fires or other disasters which could cause a breakdown of these improvements; and

(ii) The trenching improvements will not be located within the floodplain of a 100-year flood.

It should be noted that Paragraphs 23.2(e) and (f) of the proposed Consent Decree provide that:

(e) Wildlife habitat(s) shall be preserved and managed as necessary to protect endangered species of wildlife to the extent required by the Endangered Species Act, 16 U.S.C. 1531 et seq., migratory birds to the extent required by the Migratory Bird Treaty Act, 16 U.S.C. 7031 et seq., and bald eagles to the extent required by the Bald Eagle Protection Act, 16 U.S.C. 668 et seq.

(f) Other than as may be necessary in connection with a Response Action or as necessary to construct or operate a Response Action Structure, there shall be no change permitted in the geophysical characteristics of RMA that has a significant effect on the natural drainage at RMA for floodplain management, recharge of groundwater, operation and maintenance of Response Action Structures, and protection of wildlife habitat(s).

While these provisions are not ARARs, they obviously must be complied with for purpose of this IRA. Based on where the North Boundary trenching improvements will be located, as well as when and where the IRA will take place, the Army believes that this IRA will have no adverse impact on any endangered species or migratory birds, or on the protection of wildlife habitats.

Moreover, the Army has separately determined that this IRA will not change the physical characteristics of RMA in a manner that will have significant effect on the natural drainage of RMA for floodplain management, recharge of groundwater and the operation and maintenance of Response Action Structures.

8.3.3 PERFORMANCE, DESIGN OR OTHER ACTION-SPECIFIC ARARs

8.3.3.1 DESCRIPTION

Performance, design or other action-specfic requirements set controls or restrictions on particular kinds of activities related to the management of hazardous substances, pollutants, or contaminants. These action-specific requirements may specify particular performance levels, actions or technologies, as well as specific levels (or a methdology for setting specific levels) for discharged or residual chemicals.

8.3.3.2 SPECIFIC LEVELS FOR DISCHARGED OR RESIDUAL CHEMICALS

The ARARs pertinent for the discharged or residual chemicals after processing by the North Boundary System, (including the trenching improvements), are described in Part 8.3.1 of this document.

8.3.3.3 CONSTRUCTION OF TRENCHES

8.3.3.3.1 AIR EMISSIONS

On the remote possibility that there may be air emissions during the course of the construction of the trenching improvements, the Army has reviewed all potential ambient or chemical-specific air emission requirements. As a result of this review, the Army found that there are, at present, no national or State ambient air quality standards currently applicable or relevant and appropriate to any of the volatile or semi-volatile chemicals in the groundwater found in the immediate southern vicinity of the North Boundary System.

Of course, in the context of this IRA, there is only a very remote chance of any release of volatiles or semi-volatiles and, even if such a release did occur, it would only be intermittent and of very brief duration (because the activity that produced the release would be stopped and modified

appropriately if a significant air emission was detected by the contractor's air monitoring specialist). The site specific health and safety plan which will be developed as part of the Implementation Document will describe details of the monitoring operations which will be conducted during this interim action and the provision to discontinue and/or modify operations if specific levels of chemicals are detected.

The NESHAPS Standard of 40 CFR Part 261 were reviewed, but not determined to be applicable or relevant and appropriate. They apply to owners of stationary sources emitting pollutants and were developed for manufacturing processes, quite dissimiliar to the short term construction contemplated by this interim action.

8.3.3.3.2 WORKER PROTECTION

With respect to the workers directly participating in this IRA, the worker protection requirements of Section 126 of the Superfund Amendments and Reauthorization Act of 1986 shall be met through compliance with the OSHA interim final rule that appears in 51 Fed. Reg. 45654 (1986)[1]

8.3.3.3.3 GENERAL CONSTRUCTION ACTIVITIES

The following performance, design or other action-specific State ARARs are selected by the Army as relevant and appropriate to this portion of the IRA and more stringent than any applicable or relevant and appropriate Federal standard, requirement, criterion or limitation:

(i) Colorado Air Pollution Control Commission Regulation No. 1, 5 CCR 1001-3, Part III(A)(1), "Fuel Burning Equipment":

No owner or operator shall cause or permit to be emitted into the atmosphere from any fuel-burning equipment, particulate matter in the flue gases which exceeds the following:

a. 0.5 lbs. per 10^6 BTU heat input for fuel burning equipment of less than or equal to 1 x 10^6 BTU/hr. total heat input design capacity;

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[1]Although OSHA proposed a permanent final rule on August 10, 1987, 52 Fed. Reg. 29620, the comment period on this rule did not close until October 5, 1987. It should be noted that, pursuant to CERCLA Section 301(f), 42 U.S.C. 9651(f), the NCP is to be amended by December 11, 1988 to provide procedures for the protection of the health and safety of employees involved in response actions.

b. For fuel burning equipment with designed heat inputs greater than 1 x 10^6 BTU per hour, but less than or equal to 500 x 10^6 BTU per hour, the following equation will be used to determine the allowable particulatle emission limitation:

$$PE = 0.5(FI)^{-0.26}$$

Where:

PE = Particulate Emission in pounds (lbs) per million BTU heat input

FI = Fuel Input in million BTU per hour

c. 0.1 lbs. per 10^6 BTU heat input for fuel burning equipment of greater than 500 x 10^6 BTU per hour or more.

d. If two or more fuel burning units connect to any opening, the maximum allowable emission rate shall be calculated by summing the allowable emissions from the units being operated.

(ii) Colorado Air Pollution Control Commission Regulation No. 1, 5 CCR 100-3, Part III(D)(2)(b), "Construction Activities":

(i) Applicability - Attainment and Nonattainment Areas

(ii) General Requirement

Any owner or operator engaged in clearing or leveling of land or owner or operator of land that has been cleared of greater than one (1) acre in nonattainment areas from which fugitive particulate emissions will be emitted shall be required to use all available and practical methods which are technologically feasible and economically reasonable in order to minimize such emissions in accordance with the requirements of Section III.D. of this regulation.

(iii) Applicable Emission Limitation Guideline

Both the 20% opacity and the no off-property transport emission limitation guidelines shall apply to construction activities; except that with respect to sources or activities associated with construction for which there are separate requirements set forth in this regulation, the emission limitation guidelines there specified as applicable to such sources and activities shall be evaluated for compliance with the requirements of Section III.D. of this regulation.

(Cross Reference: Subsections e. and f. of Section III.D.2 of this regulation.)

(iv) Control Measures and Operating Procedures

Control measures or operational procedures to be employed may include, but are not necessarily limited to, planting vegetation cover, providing synthetic cover, watering, chemical stabilization, furrows, compacting, minimizing disturbed area in the winter, wind breaks and other methods or techniques. . .

(iii) Colorado Ambient Air Quality Standards, 5 CCR 1001-14, Air Quality Regulation A, "Diesel-Powered Vehicle Emission Standards for Visible Pollutants":

A. No person shall emit or cause to be emitted into the atmosphere from any diesel-powered vehicle any air contaminant, for a period greater than 10 consecutive seconds, which is of such a shade or density as to obscure an observer's vision to a degree in excess of 40% opacity, with the exception of Subpart B below.

B. No person shall emit or cause to be emitted into the atmosphere from any naturally aspirated diesel-powered vehicle of over 8,500 lbs. gross vehicle weight rating operated above 7,000 feet (mean sea level), any air contaminant for a period greater than 10 consecutive seconds, which is of such a shade or density as to obscure an observer's vision to a degree in excess of 50% opacity.

C. Diesel-powered vehicles exceeding these requirements shall be exempt for a period of 10 minutes, if the emissions are a direct result of a cold engine start-up and provided the vehicle is in a stationary position.

D. This standard shall apply to motor vehicles intended, designed and manufactured primarily for use in carrying passengers or cargo on roads, streets and highways.

The following performance, design or action-specific State ARAR is applicable to this portion of the IRA and is more stringent than any applicable or relevant and appropriate Federal standard, requirement, criterion or limitations:

(iv) Colorado Noise Abatement Statute, C.R.S. Section 25-12-103:

(1) Every activity to which this article is applicable shall be conducted in a manner so that any noise produced is not objectionable due to intermittence, beat frequency, or shrillness. Sound levels of noise radiating from a

property line at a distance of twenty-five feet or more therefrom in excess of the db(A) established for the following time periods and zones shall constitute prima facie evidence that such noise is a public nuisance:

Zone	7:00 a.m. to next 7:00 p.m.	7:00 p.m to next 7:00 a.m.
Residential	55 db(A)	50 db(A)
Commercial	60 db(A)	55 db(A)
Light industrial	70 db(A)	65 db(A)
Industrial	80 db(A)	75 db(A)

(2) In the hours between 7:00 a.m. and the next 7:00 p.m., the noise levels permitted in subsection (1) of this section may be increased by ten db(A) for a period of not to exceed fifteen minutes in any one-hour period.

(3) Periodic, impulsive, or shrill noises shall be considered a public nuisance when such noises are at a sound level of five db(A) less than those listed in subsection (1) of this section.

* * *

(5) Construction projects shall be subject to the maximum permissible noise levels specified for industrial zones for the period within which construction is to be completed pursuant to any applicable construction permit issued by proper authority or, if no time limitation is imposed, for a reasonable period of time for completion of project.

* * *

(8) For the purpose of this article, measurements with sound level meters shall be made when the wind velocity at the time and place of such measurement is not more than five miles per hour.

(9) In all sound level measurements, consideration shall be given to the effect of the ambient noise level created by the encompassing noise of the environment from all sources at the time and place of such sound level measurement.

* * *

In substantive fulfillment of Colorado Air Pollution Control Commission Regulation No. 1, this IRA will employ the specified methods for minimizing emissions from fuel burning equipment and construction activities. In substantive fulfillment of Colorado's Diesel-Powered Vehicle Emission

Standards, no diesel motor vehicles associated with the construction shall be operated in a manner that will produce emissions in excess of those specified in these standards.

The noise levels pertinent for construction activity provided in C.R.S. Section 25-12-103 will be attained in accordance with this applicable Colorado statute.

8.3.3.3.4 REMOVAL OF SOIL FROM TRENCHES

There are no action-specific ARARs that pertain to the removal of soil during the construction of the trenches. ARARs pertaining to excess soils are discussed below.

Although not an ARAR, removal of soil from the areas where the North Boundary System Trenches are to be located will be performed in accordance with the procedures set forth in the Task No. 32 Technical Plan -- Sampling Waste Handling (November 1987) and EPA's July 12, 1985 memorandum entitled "EPA Region VIII procedure for handling of materials from drilling, trench excavation and decontamination during CERCLA RI/FS operations at the Rocky Mountain Arsenal." In general, any excavated soils generated during the course of this IRA, either at surface or subsurface will be returned to the trenches from which they were excavated in reverse order from which they were removed (i.e., last out, first in). Any excavated materials that remain after all backfilling has been completed, which are suspected of being contaminated based on field screening techniques[2], will be properly stored, sampled, analyzed, and ultimately disposed of as nonhazardous or CERCLA hazardous wastes[3] as appropriate.

For materials determined to be hazardous waste, substantive RCRA provisions are applicable to their management. These substantive provisions include, but are not limited to; 40 CFR Part 262 (Subpart C, Pre-Transport Requirements), 40 CFR Part 263 (Transportor Standards), 40 CFR Part 264 (Subpart I, Container Storage and Subpart L, Waste Piles). The specific substantive standards applied will be determined by the factual circumstances of the accumulation, storage or disposal techniques actually applied to any such material.

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[2]The field screening techniques to be used to determine contamination are HNU, OVA, discoloration (visual) and odor. Readings or visual and odor inspection will be taken at least every five feet.

[3]It should be noted that the "land ban" provisions of RCRA Section 3004, 42 U.S.C. 6924, are not pertinent to any such excavated soil that is identified as contaminated because the disposal and storage of these soils will be undertaken solely pursuant to 42 U.S.C. 9606 and thus will be subject to the exception in 42 U.S.C. 6924(d) (4) for CERCLA response actions taken through November 9, 1988, and thereafter to the exception in 42 U.S.C. 6924(j) for storage "solely for the purpose of accumulation of such quantities of hazardous waste as are necessary to facilitate proper recovery, treatment or disposal" since this waste will ultimately be subject to treatment pursuant to the ROD for the pertinent CERCLA operable unit.

9.0 SCHEDULE

It is estimated that a Draft Implementation Document can be issued within 30 days after the release of the Final Interim Response Action Decision Document (IRADD). It is anticipated that preliminary design and discussion with the parties and the State will proceed concurrently with the review of the Draft IRADD in order to expedite preparation of the Draft Implementation Document.

10. CONSISTENCY WITH THE FINAL REMEDIAL ACTION

Performance of the NBC/TS and identification of final remedial actions to improve this system's performance are being accomplished by the ongoing Task 36. Task 36 was initiated at the same time as the evaluation of interim action for NBC/TS. Based upon the WES recommendation of deep trenches for the interim action, hydrogeologic modeling for Task 36 has incorporated simulated deep trenches. The deep trenches will be consistent with any final remedial action selected for the NBC/TS.

11. REFERENCES

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APPENDIX

COMMENTS AND RESPONSES

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION VIII
999 18th STREET—SUITE 500
DENVER, COLORADO 80202-2405

MAY 1 3 1988

Ref: 8HWM-SR

BY FEDERAL EXPRESS

Colonel W. N. Quintrell
Program Manager
AMXRM-PM
Office of the Program Manager
for Rocky Mountain Arsenal
Building E 4460
Aberdeen Proving Ground, Maryland 21010-5401

Re: Proposed Decision Document for the Interim Response Action for the Improvement of the North Boundary System at Rocky Mountain Arsenal Via Construction of Ground Water Recharge Trenches

Dear Colonel Quintrell:

The following constitutes U. S. EPA Region VIII's ("EPA") comments concerning the proposed Decision Document for the Interim Response Action for the Improvement of the North Boundary System at Rocky Mountain Arsenal Via Construction of Ground Water Recharge Trenches (the "IRA") which was received by the Region on April 18, 1988.

At the outset, EPA recognizes that the improvement of the North Boundary System IRA consists of a number of components and that the above-proposed Decision Document addresses only one component of that IRA. However, EPA also recognizes that each component of the North Boundary IRA must take into consideration other components of that IRA. Therefore, our letter of March 3, 1988, which provided preliminary identification of ARAR's warranting consideration in the context of improvement of the North Boundary System IRA, was prepared with that consideration in mind. EPA is in receipt of the letter dated April 11, 1988, from Mr. McGrath of Holme, Roberts, and Owen regarding this matter. While EPA disagrees with certain positions taken in that letter, the following comments are solely directed toward our disagreement with that letter as applicable to the trenches component of this IRA, and constitutes our comments concerning the draft Decision Document.

EPA recognizes that, because of the nature and the status of the assessment of the feasibility of the ground water recharge trenches, a detailed assessment of alternatives is unnecessary.

However, as set forth in paragraph 9.8 of the proposed Consent Decree, a proposed IRA Decision Document should establish an IRA deadline for completion of the IRA, if appropriate. It is unclear as to how section 9.0 of the proposed trenches IRA Decision Document fulfills this requirement. EPA requests clarification. Further, pursuant to paragraph 9.5 of the proposed Consent Decree, EPA would request further discussion of how this IRA shall, to the maximum extent practicable, be consistent with and contribute to the efficient performance of final response actions. EPA also requests further explanation of how the Army shall ensure an orderly transition from this IRA to final response actions, and how this IRA avoids duplication between IRA's and final response actions.

EPA has concerns regarding statements made in the last paragraph at page 20 of the Decision Document. EPA requests clarification and explanation of statements regarding the release of volatiles and semi-volatiles during construction activity. Further, EPA would request an explanation of the anticipated monitoring of potential air emissions during construction activity, and proposed "modification" of activities to prevent significant concentrations of air emissions during construction activities.

EPA also notes that, if air releases occur during construction activities, these may include the release of benzene and methylene chloride. If this is the case, standards pertinent to these compounds are contained in promulgated National Emissions Standards for Hazardous Air Pollutants ("NESHAPS") at 40 C.F.R. Part 61. EPA requests evaluation of these potential ARAR's.

Given the limited scope of this IRA and the fact that general soils contamination will be addressed as part of later RI/FS work, EPA concurs with the Army's approach for removal and replacement of soils during excavation, as set forth at pages 24 and 25 of the Decision Document. However, it would appear that there may remain additional excess soil which will not be returned to the trenches and which may be contaminated. Therefore, EPA would request further discussion regarding the sampling, analysis, storage, potential transportation, and disposal of this excess excavated material. EPA requests further discussion of ARAR's which would be applicable or relevant and appropriate if excess excavated materials are determined to be contaminated. In this context, EPA recognizes that a draft implementation document describing actual construction procedures and processes will follow the IRA Decision Document. However, EPA would request further clarification and discussion regarding anticipated procedures to be followed and ARAR's which may be

pertinent in the event that contaminated excess excavated materials are identified. As set forth in our letter of March 3, 1988, EPA recommends evaluation of ARAR's as set forth in 40 C.F.R. Parts 260 through 264.

As set forth in pages 18 and 19 of the Decision Document, EPA agrees that 40 C.F.R. section 141.5 is relevant and appropriate to this response action. EPA agrees that this regulation may not be applicable in this context. However, as more fully explained at page 2 of EPA's comments on the Decision Document for the Abandoned Well Interim Response Action (dated April 29, 1988), the assertion that because a response action is being conducted entirely on site, and in compliance with CERCLA sections 120 and 121, does not automatically mean that a particular ARAR is not "applicable." Therefore, we request deletion of this basis for the determination of non-applicability of 40 C.F.R. section 141.5.

Sincerely,

Robert L. Duprey, Director
Hazardous Waste Management Division

cc: Lt. Col. Scott P. Isaacson
Thomas P. Looby, CDH
David Shelton, CDH
Chris Hahn, Shell Oil Company
R. D. Lundahl, Shell Oil Company
Thomas Bick, Department of Justice
David Anderson, Department of Justice
Preston Chiaro, EBASCO

RESPONSE TO US EPA REVIEW COMMENTS
ON PROPOSED DECISION DOCUMENT FOR
THE INTERIM RESPONSE ACTION FOR THE
IMPROVEMENT OF THE NORTH BOUNDARY SYSTEM
AT ROCKY MOUNTAIN ARSENAL VIA CONSTRUCTION
OF GROUNDWATER RECHARGE TRENCHES

Response to Specific Comments -

1. Page 2, paragraph 1. A proposed IRA Decision Document should establish an IRA deadline. How will this IRA, to the maximum extent practicable, be consistent with and contribute to the efficient performance of final response actions.

Response: This IRA for improvement of the NBS via construction of groundwater recharge trenches is a part of a comprehensive program to improve the NBS on an interim basis which will, also, fit in with the Final Response Action by treating groundwater flowing off the Arsenal. The Implementation Document for this IRA will set forth the construction schedule for the IRA including completion date.

2. Page 2, paragraph 2. The EPA is concerned about the release of volatile and semi-volatile compounds during construction activity.

Response: The discussion presented in Section 8.3.3.3.1 was only meant to be a brief general description of approved monitoring procedures already in use in the on-going RMA remedial investigation fieldwork. Specifics can currently be found in the RMA Project Health and Safety Plans. A site specific health and safety plan will be issued as part of the Implementation Document.

3. Page 2, paragraph 3. Standards concerning benzene and methylene chloride promulgated pursuant to the National Emissions Standards for Hazardous Air Pollutants (NESHAPS), 40 CFR Part 61, should be evaluated as potential ARARs.

Response: As noted in the Decision Document, the Army believes that there is only a remote possibility that any emissions of benzene and methylene chloride or other volatiles or semi-volatiles could be released during this Interim Response Action (IRA). The NESHAPS standards of Part 61 have been reviewed in response to EPA's comment. These standards are not considered applicable since they apply to owners of stationary sources which emit the regulated pollutants. Detailed consideration was given to whether these standards were relevant and appropriate to the North Boundary System Recharge Trench IRA. The Army believes that these NESHAPS standards are not relevant and appropriate to apply to activities conducted within the scope of this IRA. These NESHAPS standards were established for emissions more related to manufacturing

activities than construction activities, particularly short term construction activities such as those to be conducted pursuant to this IRA. The concerns that were intended to be addressed by the NESHAPS standards are considered too dissimilar to those involved in this IRA for the NESHAPS standards to be relevant and appropriate to this IRA.

4. Page 2, paragraph 4. EPA recommends consideration of 40 CFR Parts 260 through 264 as potential ARARs for excess soil removed during trench excavation and not returned to the trenches. EPA also requests further discussion of the procedures to be followed regarding contaminated excess materials.

Response: As noted in the Decision Document this material will be screened in accordance with the EPA June 12, 1985 memorandum to determine whether it is potentially contaminated. If the screening procedures determine that the material is potentially contaminated further management of that material will be according to the guidance provided in that document, e.g., that storage and handling of materials determined to be hazardous waste will be in accordance with substantive RCRA requirements. Substantive RCRA requirements, considered to be ARARs for the management of materials determined to be hazardous waste, are found in 40 CFR Parts 260 through 264. These are discussed in greater detail in the text.

5. Page 3, paragraph 1. The assertion that because a response action is being conducted entirely on site and in compliance with CERCLA does not automatically mean that a particular ARAR is not applicable.

Response: The discussion cited was meant only to address the applicability of the regulation under consideration. The Army agrees that the conduct of a response action entirely on-site and in compliance with CERCLA does not automatically mean that any particular standard or criteria is not applicable. Applicability of potential ARARs is determined under the specific factual circumstances of each proposed action. The specific regulation was determined not to be applicable because the North Boundary System is not a public water system.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
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IN REPLY REFER TO:

TAKE PRIDE IN AMERICA

May 16, 1988

Colonel Wallace N. Quintrell
Program Manager, Rocky Mountain Arsenal
Department of the Army, USATHMA
Building 4435
Aberdeen Proving Ground, Maryland 21010-5401

Dear Colonel Quintrell:

We have reviewed the proposed Decision Document for the Interim Response Action of the North Boundary System at Rocky Mountain Arsenal via construction of Groundwater Recharge Trenches.

We can find no forseeable problem on any expected direct effects of the proposed action on migratory birds, including bald eagles. There would be some indirect effect including loss of habitat for prey species (utilized by raptors) during construction and possible loss of prey animals from them falling into uncovered trenches. To the extent possible, open trenches should be covered until gravel fill is in place and after the top-soil cap is laid down, it should be revegetated. Also, soils adjacent to the pits that are rendered bare or seriously disturbed by project equipment should be revegetated as well.

Adherence to the above recommendations would minimize the potential loss of habitat and individual prey animals resulting from this project. We appreciate the opportunity to comment on the subject document. Contacts for this response would be either Mr. Rod DeWeese or Dr. Pete Gober at FTS 776-2675.

Sincerely,

Lawrence R. DeWeese for

Jeffrey D. Opdycke

cc: Bob McCue, FWS
Tom Jackson, FWS
Bob Stewart, DOI
Connally Mears, EPA
Douglas Reagan, ESE

RESPONSE TO US DEPARTMENT OF THE INTERIOR REVIEW
COMMENTS ON PROPOSED DECISION DOCUMENT FOR
THE INTERIM RESPONSE ACTION FOR THE
IMPROVEMENT OF THE NORTH BOUNDARY SYSTEM
AT ROCKY MOUNTAIN ARSENAL VIA CONSTRUCTION
OF GROUNDWATER RECHARGE TRENCHES

Response to General Comments -

1. The DOI can find no forseeable problem on any expected direct effects of the proposed action on migratory birds including bald eagles. There would be some indirect effect including loss of habitat for prey species during construction and possible loss of prey animals from them falling into uncovered trenches. To the extent possible open trenches should be kept covered.

Response: During construction of trenches, procedures as recommended in this comment will be followed to the extent possible to minimize the potential loss of habitat and individual prey animals. Trench surfaces and other surface-disturbed areas adjacent to the trenches are to be revegetated.

STATE OF COLORADO

COLORADO DEPARTMENT OF HEALTH
4210 East 11th Avenue
Denver, Colorado 80220
Phone (303) 320-8333

Roy Romer
Governor

Thomas M. Vernon, M.D.
Executive Director

May 17, 1988

Mr. Donald Campbell
Department of the Army
Program Manager's Office
RMA Contamination Cleanup
AMXRM-EE, Building E4585
Aberdeen Proving Ground, MD 21010-5401

Re: State Comments on Proposed Decision Document for the Interim Response Action for the North Boundary System at Rocky Mountain Arsenal via Construction of Groundwater Recharge Trenches, April, 1988

Dear Mr. Campbell:

Enclosed are the State's comments on the above-referenced Proposed Decision Document. The State believes that the selected alternative to use deep gravel trenches has the potential to correct the hydraulic imbalance across the North Boundary Containment System's slurry wall. However, the State cannot comment on this alternative's technical adequacy because at least two (2) supporting documents have not been made available for State review. This has again prevented the State from substantive participation in the ongoing RMA investigations and proposed decisions.

Nonetheless, the State submits these comments in the spirit of cooperation so that the recharge capacity of the North Boundary Containment System can be increased in a technically feasible manner.

If there are any questions on the attached comments, please contact Mr. Jeff Edson with this division.

Sincerely yours,

David C. Shelton
Director, Hazardous Materials
and Waste Management Division

DCS/PB/rw

pc: Michael R. Hope, Deputy Attorney General
David L. Anderson, Esq.
Chris Hahn, Shell Oil Co.
Edward J. McGrath, Esq., HRO
Michael Gaydosh, Esq., EPA
Connally Mears, EPA

BW\PBDSHELT.LTR

STATE COMMENTS ON THE PROPOSED DECISION DOCUMENT FOR THE INTERIM RESPONSE ACTION FOR THE NORTH BOUNDARY SYSTEM AT ROCKY MOUNTAIN ARSENAL VIA CONSTRUCTION OF GROUNDWATER RECHARGE TRENCHES, APRIL, 1988

General Comments

1. The use of deep gravel trenches as the method for increasing the recharge capacity at the North Boundary System has not been fully presented and documented. Without the analyses that support the selection of this alternative, it is difficult to verify the Army's findings or fully concur with the selection. Apparently, the USAE Waterways Experiment Station completed at least two studies of the proposed recharge trench system (Murphy, 1988) and (Lutton, 1988). These documents must be made available for State review. It also appears that Shell/MKE has completed some analyses on the trench design, with some general information presented on pages 14-16. These analyses should also be made available for State review.

In addition, the State must be afforded the opportunity to review and comment on the plans and specifications of the trench system to verify and concur that the system will adequately achieve desired recharge rates over the lifetime of the system.

2. The State recommends that the trenches be constructed in a phased approach due to the uncertainty of constructability.

Additional discussion among the MOA parties is necessary to determine if the NBCS will need to be shut down and for how long. Furthermore, discussion is necessary to determine how the trenches will be tied into the existing North Boundary System.

3. Numerous questions remain with respect to the selection of the deep gravel trenches as the preferred interim action alternative:

a. What assumptions have been made regarding the effect the trenches will have on the alluvial aquifer flow system and subsequent offpost contaminant movement?

b. What assumptions have been made regarding the effect the trenches will have on the underlying Denver units? Will the localized recharge mounds cause significant downward gradients and how will this effect contaminant movement beneath the North Boundary Containment System?

c. The anticipated (designed) recharge rates may not be realistic over the long-term operations of the system. Therefore, it may be necessary to plan for the construction of additional trenches should the Task 36 findings indicate that the recharge capacity is inadequate.

d. What design features have been incorporated to facilitate internal cleaning equipment and cleanout/flushing capabilities? What types of equipment are proposed for cleaning the system? What is the anticipated frequency of maintenance for the trenches?

e. Are major modifications (e.g., increased effluent) anticipated for the North Boundary Containment System if deemed necessary in the findings of Task 36? Are preliminary findings of Task 36 available for discussion?

f. Is deep excavation feasible in the saturated materials in this area? What construction planning has been accomplished to assure that "deep" excavation will be safe and possible?

g. How effective will the cover membrane be in preventing gravity-induced silting of the gravel?

h. Will the Phillips geotextile fabric along the sides and the bottom of the trench be servicable should it plug with fines to a point where the needed recharge capacity is not met?

Specific Comments

1. Pg. 1. A separate paragraph needs to be added which summarizes Task 36. This summary should include but not be limited to the statement of the problem (Section 1.1), the system operation (Section 1.2.4) and the summary of technical approach (Section 1.3).

2. Pg. 1. To assess the effectiveness of the trenches additional piezometers downgradient from the trenches should be installed to provide information on the size and extent of the recharge mounds and resultant affects on the local flow system. New or existing Denver formation wells must also be monitored to determine the vertical gradient and impact of the trenches on the Denver units.

3. Pg. 2, para. 3. The second sentence should indicate that, generally alluvial groundwater beneath RMA flows from southeast to northwest and that Figure 3 represents generalized alluvial groundwater flow across RMA. Emphasis added.

4. Pg. 5, Figure 3. See Specific Comment 3.

5. Pg. 9. Please explain the objective which states "flush residual contaminants"?

6. Pg. 11, para. 2 What are the key construction steps which apparently have been outlined?

7. Pg. 13, para. 1. The report should be reworded to state that "... if water levels upgradient and downgradient of the system can be balanced, the potential for contaminated alluvial groundwater to bypass the barrier can be minimized."

8. Pg. 15. Due to the uncertainty of the trench construction, the State recommends that a phased approach be used in constructing the entire recharge system. See General Comment 2.

9. Pg. 15. The Health and Safety Plan should include provisions/procedures to ensure worker safety in the event that a trench collapses under construction.

10. Pg. 19, para. 1 states "... no one is presently drinking groundwater that is treated by the North Boundary System; and this IRA is being conducted pursuant to CERCLA, entirely on-site and in compliance with CERCLA Sections 120 and 121, 42 U.S.C.

9620 and 9621. Thus, the regulatory jurisdiction otherwise associated with the Safe Drinking Water Act and the National Primary Drinking Water Regulations simply does not arise. In these circumstances, the nature of the remedial action is such that the jurisdictional prerequisites of these requirements are not met. Thus, the identified regulation is not applicable here."

Thus, the Army has concluded that the only provision of the SDWA which is relevant and appropriate is the facility siting requirements of 40 CFR Section 141.5. This analysis is inaccurate for a number of reasons, including:

a. The recharge trenches are specifically designed to release water to the aquifer to migrate off-site. Concluding that this IRA will be conducted entirely on-site is erroneous. Therefore, additional statutes and regulations may be applicable or relevant and appropriate. However, these comments are not the appropriate forum for discussing the ARARs for treatment of the contaminated groundwater since this Decision Document only addresses the construction of the recharge trenches.

b. The Decision Document concludes that ... "no one is presently drinking the groundwater ...". However, there are

no institutional controls which prevent the holder of water rights the right to drink that groundwater at any time. Furthermore, while people may not be drinking the water "presently," they are using it for washing, bathing, stock watering, and gardening. Once again, these comments are not the appropriate forum for discussing the ARARs for treatment of the contaminated groundwater since this Decision Document only addresses the construction of the recharge trenches.

c. The State agrees with the statement in Section 8.3.1, that the Army must address ARARs that pertain to the treatment of contaminants during the North Boundary System - System Improvement IRA (IR-03-42). As previously stated, this is not the appropriate forum to address ARARs relating to treatment of contaminated groundwater.

d. According to the U.S. EPA, the proposed trenches constitute waste injection facilities and thereby come under the jurisdiction of Federal UIC regulations. Therefore, the UIC regulations are applicable or relevant and appropriate.

18. Pg. 20. Section 8.3.3.2 should be deleted from the Decision Document since this is an inappropriate forum for discussing ARARs for the treatment of contaminated groundwater.

RESPONSE TO STATE OF COLORADO REVIEW
COMMENTS ON PROPOSED DECISION DOCUMENT FOR
THE INTERIM RESPONSE ACTION FOR THE
IMPROVEMENT OF THE NORTH BOUNDARY SYSTEM
AT ROCKY MOUNTAIN ARSENAL VIA CONSTRUCTION
OF GROUNDWATER RECHARGE TRENCHES

Response to General Comments -

1. CDH requests analysis and documentation on deep gravel trenches be made available for State review.

Response: Further documentation and analysis may be found in the two Waterways Experiment Station (WES) reports mentioned in this comment. These reports are available to the State of Colorado at the Rocky Mountain Arsenal Information Center as Document #88130R01 and Document #88155R01. In addition, the plans, specifications and design analyses of the trench system will be available for the State to review and comment on in the forthcoming design document.

2. Recommendations are made that the trenches be constructed in a phased approach. Discussion is requested pertaining to: the need to shut down the NBCS and to determine how the trenches will be tied to the existing system.

Response: Although the WES report indicated that constructability of a deep trench was a major unknown factor, further review of construction techniques, as cited on page 12 of the proposed decision document, indicates that construction of the proposed trench system will be feasible.

The pipe manifold that will deliver treated water to the trench system will connect with the existing 8-inch effluent manifold from the treatment plant. A tee and valve will be installed in the existing manifold during a routine maintenance shutdown. This will allow tie-in of the trench manifold piping without any additional shutdown of the treatment system.

The treatment system will continue to use the existing well system while the trench system is being constructed. Thus, if there was a problem with the constructability of the trench system, which is not likely, the treatment system and recharge wells would continue to operate while any problems were being solved.

The trench system is designed such that one section could be completed and operated while construction of the remainder of the system is being completed. Additionally, each section of trench could be put into operation as it is completed, i.e., a phased approach; however, there appears to be little advantage to doing so. Since the capacity of any recharge system gradually deteriorates, the trench system

proposed has been designed and instrumented to develop information that will be useful in evaluating the application of recharge trenches in the final remedial solution. In addition, the trench system will improve the recharge capacity of the existing NBCS. If the proposed system fails to provide either the capacity or the distribution of recharge that is needed, modifications or additional trenches could be provided. The system is designed so that modifications can be made without shutting the whole system down.

The effluent from the treatment system will be piped and valved so that it will be possible to operate either the old recharge wells, the recharge trenches, or both systems at the same time. In addition, the flow to each section of trench can be shut off without shutting down the whole system.

3a. What effect will the trenches have on the alluvial aquifer flow?

Response: The construction and operation of recharge trenches will permit a reverse water level gradient to be established and maintained at the barrier area where the recharge trenches are installed. The reverse gradient established by this IRA is in the area where the system intercepts the major contaminant plumes and where the major head differences exist across the barrier. The effect that the trenches will have is to substantially improve hydrologic conditions at the barrier which will minimize the potential for off-post contaminant movement.

3b. How will the trenches effect the underlying Denver units?

Response: Task 36 investigated the hydrologic relationship of the alluvial and Denver Foundation. Based on this assessment it is expected that the implementation of this IRA will result in significant downward gradients of treated groundwater which will minimize the potential for contaminant movement in shallow Denver Formations beneath the North Boundary Containment System.

3c. It may be necessary to plan for the construction of additional trenches should the Task 36 findings indicate that the recharge capacity is inadequate.

Response: The objective of the Task 36 investigation is to assess specific components of the existing contaminant system and make recommendations for improvement. One area being assigned under Task 36 is the dewater/recharge system. This IRA has been coordinated with the Task 36 investigation and found to be consistent with long term goals for system improvement. This IRA is an interim measure and may not meet all the long term recommendations resulting from Task 36 study, and, therefore, the construction of additional system components may be necessary.

3d. What design features have been incorporated to facilitate maintenance?

Response: Removable plugs or cleanouts will be incorporated in the manhole associated with each recharge trench and at key locations along the main manifold. Through these cleanouts, both the manifold and the perforated piping in the recharge trenches can be cleaned with readily available jetting equipment. Cleaning the piping is not expected to be required frequently.

3e. Are major modifications anticipated for the NBCS if deemed necessary in the findings of Task 36? Are preliminary findings of Task 36 available for discussion?

Response: All recommendations of Task 36 will be considered for implementation. The Task 36 technical report is currently being prepared and completion of the draft report is scheduled for late June followed by the preparation of a final draft report which will be provided to the Parties and State by late July.

3f. Is deep excavation feasible? What planning has been accomplished to assure safe excavation?

Response: Trench construction in the saturated materials is expected to be made feasible and safe by using a trench box or movable shoring device which will be dragged forward by the backhoe as the excavation advances. Gravel will be placed to a depth of approximately three to five feet in the trench box prior to dragging it forward, thus any saturated alluvium will be prevented from collapsing into the excavation. Water contour maps of the area indicate that the saturated thickness of the alluvium is minimal in the area of the proposed trench location and the above construction method is expected to provide sufficient support to prevent collapse of the saturated (wet) material that has minimum stability. Most of the unsaturated (dry) alluvium has a high silt and clay content and should present no stability problem in the upper portion of the trench. In any case, the placement of the geotextile fabric, the remainder of the gravel, and the perforated distribution pipe will be done from above and no one will be required to go down into the trench.

3g. How effective will the cover membrane be in preventing gravity induced silting of the gravel?

Response: The Phillips Geotextile membrane is manufactured to act as a filtration media allowing water through, but holding back particulates. In this application the cover membrane over the top of the gravel fill is expected to effectively prevent gravity induced silting of the voids in the gravel by fines washed out of the soils at the top of the trench.

3h. Will the geotextile fabric along the sides and bottom of the trench be serviceable?

Response: The geotextile fabric along the sides of the trench will not be serviceable. This fabric will be installed against the earthen sides of the trench only down to the top of the first lift of gravel. The first lift of gravel will be deep enough to fill the saturated zone and prevent collapse of the wet soils as the trench box is moved forward. The geotextile will then be hung down on each side of the trench and the second lift of gravel will be placed between the two filter membranes. In this application the filter membrane is expected to reduce silting of the voids in the gravel by preventing erosion of silty material from the trench walls by the treated water being recharged and by groundwater that can flow through the walls into the trench.

Response to Specific Comments -

1. Page 1. A separate paragraph needs to be added which summarizes Task 36.

Response: It is not appropriate to discuss Task 36 in the context of this interim action. Task 36 will be discussed in detail in the North Boundary System - Other Systems Improvements IRA due later this year.

2. Page 2, paragraph 3. Downgradient piezometers should be installed and new or existing Denver formation wells must also be monitored.

Response: The installation of additional monitoring wells has been identified as part of this interim action. Many of the new wells will be located within the trenches to monitor water levels for operational control purposes. Other wells will be located close to the barrier at a point halfway between the end of the trenches to determine the hydrologic conditions at the barrier. The monitoring of both alluvial and Denver Formation wells is being conducted to support the operation of the North Boundary Containment/Treatment System, to include the operation of recharge trenches when installed. Consideration will be given to the installation of additional monitoring wells downgradient of the trenches if a technical requirement is identified.

3. Page 2, paragraph 3. Emphasize text to clarify generality.

Response: The text shall be modified as follows: "Alluvial groundwater beneath RMA generally flows from southeast to the northwest. Figure 3 represents the generalized alluvial groundwater flow across RMA."

4. Page 5, paragraph 3. See specific comment 3.

Response: The description for Figure 3 shall be modified as follows: "Generalized Alluvial Groundwater Flow Across RMA."

5. Page 9. Please explain the objective which states "flush residual contaminants"?

Response: As a result of the North Boundary System limitation to adequately recharge water in the western portion of the system, little effect on the cleanup of contamination located downgradient of the system has occurred since the system was constructed. The installation and subsequent operation of the IRA recharge trenches will improve the capability of introducing treated water into the western sections of the system which will result in a flushing of the residual contaminants. Due to the physical characteristics of the aquifer in this area, the movement of contamination through the introduction of additional recharge water is expected to take considerable time.

6. Page 11, paragraph 2. What are the key construction steps which have apparently been outlined?

Response: The key construction steps include:

1) Beginning each recharge trench by excavating a working surface approximately 4-6 feet in depth and about 12 feet wide in each trench and stockpiling the soil for later replacement in the top of the trench.

2) Excavating the trench in a trench box that should hold the trench open while the first lift of gravel is placed (only enough gravel is initially added to keep the trench open long enough to install the geotextile membrane along the sides of the trench, and to place additional gravel).

3) Placing potentially contaminated soil excavated from the trench along both sides of the working surface. It will not be removed from the excavated area.

4) Pulling the trench box forward with the backhoe as more trench is excavated to the required depth.

5) Draping the geotextile over the sides of the trench to the top of the first lift of gravel.

6) Filling the trench with the second lift of gravel until the desired elevation of the perforated pipe invert is reached.

7) Placing the perforated pipe in the trench, and covering it with approximately 6 inches of gravel.

8) Folding the top portion of the geotextile fabric over the gravel in the trench to act as a cover.

9) Grading and compacting the potentially contaminated excavated soils at the bottom of the working surface excavation and filling the remaining portion of the excavation with the clean compacted fill material. The topsoil is placed last, and will be revegetated.

7. Page 13, paragraph 1. The report should be reworded to specify alluvial groundwater to bypass the barrier can be minimized.

Response: The report is being reworded as suggested in this comment.

8. Page 15. State recommends phased approach to construction. See general comment 2.

Response: ne prime uncertainties relating to the trench construction are the questions of sidewall stability and potentially contaminated excavated soils. To mitigate these uncertainties the following precautions will be taken;

- A 12 foot wide working surface, with sloped sides, will be excavated 4 to 6 feet below present grade. This will reduce the height of the vertical trench walls to a maximum of fifteen feet.

- Potentially contaminated excavated soils will be excavated from the trench and placed on the excavated working surface. This approach precludes handling these materials outside the excavated area and will allow them to be spread and compacted on the bottom of working surface and covered with the clean surface soils upon completion of construction.

- The site will be monitored during construction and appropriate procedures will be followed as dictated by site conditions.

- A trench box will be used to support the trench walls at the point of excavation.

- A first lift of gravel will be placed in the rear half of the trench box to support the saturated alluvium as the trench box is pulled forward.

- A second lift of gravel will be placed in the trench as soon as possible after the trench box has been advanced. This lift will fill the trench to approximately one foot below the working surface.

- The construction method is designed so that no one is required to go into the trench.

Application of these precautions should reduce the uncertainty to that of a normal construction project. In any case, the construction of the system starts with excavation and if any unforeseen problems arise during excavation, they will be solved before additional work is done. In this sense the nature of the project dictates a phased approach since only one or two trench segments would be excavated at a time.

9. Page 15. The Health and Safety Plan should include provisions/procedures to ensure worker safety in the event that a trench collapses under construction.

Response: Agreed. The Health and Safety Plan will include provisions/procedures to ensure worker safety in the event that a trench collapses under construction. There is no plan for a worker to be in a trench at any time except when depths and cut slopes conform to OSHA requirements.

10. Page 19, paragraph 1. The Army has concluded that the only provision of the SDWA which is relevant and appropriate is the facility siting requirements of 40 CFR Section 141.5. This analysis is inaccurate for a number of reasons.

a. Concluding that this IRA will be conducted entirely onsite is erroneous.

b. The statement "no one is presently drinking the groundwater" is misleading.

c. This is not the appropriate forum to address ARARs relating to treatment of contaminated groundwater.

Response: The State of Colorado noted in these comments that this Decision Document is not the appropriate forum for review of the issues noted, so no response to these comments is provided.

d. According to EPA, the proposed trenches constitute waste injection facilities and thereby come under the jurisdiction of the Federal Underground Injection Control (UIC) Regulations.

Response: The Army is not aware of the basis for this comment. The UIC regulations contained in 40 CFR Part 146 are generally intended to regulate injection wells used for the disposal of hazardous waste. The trenches to be constructed under this Interim Response Action (IRA) will be constructed of fresh gravel, material excavated from the trench, piping and similar material and do not involve any "waste injection." The Army does not believe that these regulations are either applicable or relevant and appropriate to this IRA.

18. Page 20. This is an inappropriate forum for discussing ARARs for the treatment of contaminated groundwater.

Response: This comment is apparently misnumbered. As noted by the State this Decision Document is not the appropriate forum for the discussion of the treatment of groundwater, so no response is provided.

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EDWARD J. McGRATH

May 18, 1988

Federal Express

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Re: ARARs Section of Proposed Decision Document for the Interim Response Action for the Improvement of the North Boundary System at RMA Via Construction of Groundwater Recharge Trenches

Dear Mr. Campbell:

Shell Oil Company submits the following comments on the ARARs section of proposed decision document for the interim response action for the improvement of the North Boundary system of RMA via construction of groundwater recharge trenches.

In section 8.2, the Army states that Shell did not nominate any potential ARARs for consideration. By letter sent by federal express dated April 11, 1988 to David Anderson from Ed McGrath, Shell addressed ARARs for this IRA. A copy of this letter is attached for your convenience.

In accordance with section 8.3.1, Shell will submit separate comments on the treatment of contaminants in groundwater by the North Boundary System.

Shell disagrees with the proposed selection of 40 C.F.R. § 141.5 (siting requirements for public water systems) as relevant and appropriate and therefore an ARAR. The Army does not describe why it believes that a siting requirement for a public water system is sufficiently similar to an IRA which is intend to increase the amount of groundwater that can

be pumped up and recharged. According to the preamble to the proposal for section 141.5, "[t]he siting requirements of § 141.41 [the precursor of § 141.5] are designed to assure that, to the extent practicable, the location of the intake and other elements of new or expanded water supply systems will be such that the public water systems will be able to provide a continuous supply of healthful drinking water." 51 Fed. Reg. 11993 (March 14, 1975). The reasons set forth by the Army for concluding that section 141.5 is not "applicable" also indicate that the regulation is not "relevant and appropriate." Those reasons are that "neither the trenches to be constructed pursuant to this IRA nor the North Boundary System are intended to constitute a public water system; no one is presently drinking groundwater that is treated by the North Boundary System." Further, the intake and other elements of new or expanded water supply systems are not sufficiently similar to the recharge trenches to justify selection of section 141.5 as an ARAR.

Shell supports the application of worker protection standards to this IRA. These standards, however, are not ARARs.

While Shell does not object to compliance with Colorado Air Pollution Control Regulation No. 1, section III(A)(1), applicable to fuel burning equipment, it requests clarification regarding how this equipment will be used in this IRA.

Shell disagrees that Colorado Air Pollution Control Commission Regulation No. 1, section III (D)(2)(b) ("construction activities"), is an ARAR. The area involved in this IRA is less than one acre. Further, paragraphs (iii) and (iv) set forth broad narrative requirements to use controls to minimize emissions and are too general to constitute a level or standard of control relating to the degree of cleanup.

The Colorado Ambient Air Quality Standards, Air Quality Regulation A, "Diesel-Powered Vehicle Emission Standards for Visible Pollutants, is only an ARAR to the extent that motor vehicles may haul soils off-site. The regulation, by its terms, applies only "to motor vehicles intended, designed and manufactured primarily for use in carrying passengers or cargo on roads, streets and highways." See paragraph D.

Shell requests clarification of how contaminated excavated soils will be handled. According to the proposed decision document, "any excavated soils generated during the course of this IRA, either at surface or subsurface will be returned to the trenches from which they were excavated in reverse order from which they were removed (i.e., last out, first in)." This activity will not be subject to a RCRA ARAR.

At a minimum, for RCRA to be an ARAR for such an activity, the activity would have to involve treatment of the soil prior to depositing the soil into the excavated area. The IRA does not involve such treatment. Mere placement of hazardous wastes excavated from an area into the same area does not trigger RCRA. The EPA Region VIII June 12, 1985 memorandum, however, is unclear regarding whether contaminated soils can be placed back into the excavation or whether the soils must be drummed. The memorandum should be interpreted as requiring drumming of only the remaining soils that cannot be placed back into the excavation. In any event, the memorandum is described by EPA as a "procedure" to comply with "EPA policy." See July 19, 1985 letter from Robert Duprey to Colonel Quintrell. It therefore is not a standard, requirement, criteria or limitation and is not an ARAR.

Shell agrees that the land ban provisions of RCRA are not ARARs for the reasons set forth in the proposed decision document. In addition, mere placement of wastes back into the same excavation would not trigger RCRA for the reasons set forth above. We also have no evidence that the soils may be contaminated with those wastes that are subject to the land disposal ban.

Very truly yours,

Edward J. McGrath /OJD

Edward J. McGrath

CLN:EJM:jal

cc: Colonel Wallace N. Quintrell - Federal Express
Lieutenant Colonel Scott Isaacson - Federal Express
Major Larry Rouse - Federal Express
David Anderson, Esq. - Hand Deliver (RMA)
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CLND/AJ9

RESPONSE TO SHELL CHEMICAL COMPANY REVIEW
COMMENTS ON PROPOSED DECISION DOCUMENT
FOR THE INTERIM RESPONSE ACTION FOR THE
IMPROVEMENT OF THE NORTH BOUNDARY SYSTEM
AT ROCKY MOUNTAIN ARSENAL VIA CONSTRUCTION
OF GROUNDWATER RECHARGE TRENCHES

Response to General Comments -

1. Comment: Shell disagrees that the siting requirements for public water systems, 40 CFR 141.5 is relevant and appropriate for this Interim Response Action (IRA).

Response: The Army believes that while this IRA is neither a public water system or provides drinking water, its construction is sufficiently similar to the construction activities regulated by 40 CFR 141.5 to make the siting requirements contained therein relevant and appropriate to apply to the construction contemplated by this IRA.

2. Comment: Shell disagrees that Colorado Air Pollution Control Commission regulation No. 1., Section III (D) (2) (b) is an ARAR.

Response: The Army believes that these regulations, while not applicable, are relevant and appropriate to the construction activities associated with this IRA. The level or standard of control established under these regulations is directed at protecting air quality from adverse effects due to construction activities. The Army believes that the construction activities to be conducted pursuant to this IRA are sufficiently similar to those intended to be controlled by this regulation for it to be relevant and appropriate in this context.

3. Comment: The Colorado Ambient Air Quality Standards, Air Quality Regulation A, "Diesel-Powered Vehicle Emission Standards for Visible Pollutants" should only be considered an ARAR to the extent that motor vehicles haul soils off-site.

Response: The Army believes that this regulation, while not applicable to this IRA activity, is relevant and appropriate in the context of this IRA. Consistent with paragraph D of this regulation, its standards are considered relevant and appropriate to apply only to vehicles designed and manufactured primarily for use in carrying passengers or cargo on roads, streets and highways.

4. Comment: Shell requests clarification of how contaminated excavated soils will be handled.

Response: Excavated soils will be returned to the excavated area on a last out, first in basis. Excess soils which cannot be returned to their excavated area will be screened in accordance with the June 2, 1985 EPA Region VIII memorandum to determine if they are potentially contaminated.

If material is determined to be potentially contaminated it will be further managed pursuant to the procedures discussed in the EPA memorandum. This subject is also discussed in the responses to comments by EPA Region VIII.